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HCAplus now includes complete International Patent Classification (IPC)
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This file contains CAS Registry Numbers for easy and accurate
substance identification.

=> d l79 bib abs hitstr retable tot

L79  ANSWER 1 OF 3  HCAPLUS  COPYRIGHT 2010 ACS on STN
AN   2004:492320  HCAPLUS  Full-text
DN   141:26150
TI   Preparation of a cathode material for secondary batteries
IN   Franger, Sylvain; Martinet, Sebastien; Le Cras, Frederic; Bourbon, Carole
PA   Commissariat A L'energie Atomique, Fr.
SO   Fr. Demande, 33 pp.
     CODEN: FRXXBL
DT   Patent
LA   French
FAN.CNT 1
     PATENT NO.          KIND   DATE        APPLICATION NO.        DATE
     --------------      ----   --------    -------------------    --------
PI   FR 2848549          A1     20040618    FR 2002-15915          20021216 <--
     FR 2848549          B1     20050121
     WO 2004056702       A2     20040708    WO 2003-FR50172        20031215 <--
     WO 2004056702       A3     20040819
         W:  CN, JP, US
         RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE,
             IT, LU, MC, NL, PT, RO, SE, SI, SK, TR
     EP 1572585          A2     20050914    EP 2003-809985         20031215 <--
         R:  AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
             IE, SI, FI, RO, CY, TR, BG, CZ, EE, HU, SK
     CN 1726167          A      20060125    CN 2003-80106132       20031215 <--
     CN 100376474        C      20080326
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	JP 2006511421	T	20060406	JP 2004-561577	20031215 <--
	US 20060204848	A1	20060914	US 2006-537947	20060216 <--
PRAI	FR 2002-15915	A	20021216 <--		
	WO 2003-FR50172	W	20031215 <--		

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

AB A cathode material for secondary batteries is prepared having the general formula AMXO4 with A being an alkali metal, especially Li or Na, M being a transition metal, especially trivalent Mn, Fe, Ni, or Co, and X being Si, S, Al, Ge, As, Mo, preferably P. The material is prepared by reacting a complex of M bound to an organic ligand, such as nitriliotriacetic acid or EGTA, with a metal salt, especially Li2HPO4. The anode of the secondary battery is made of Li4Ti5O12.

IT 15365-14-7P, Iron lithium phosphate felipo4
RL: CPS (Chemical process); DEV (Device component use); PEP (Physical, engineering or chemical process); SPN (Synthetic preparation); PREP (Preparation); PROC (Process); USES (Uses)
(cathode material; preparation of cathode material for secondary batteries)

RN 15365-14-7 HCAPLUS

CN Phosphoric acid, iron(2+) lithium salt (1:1:1) (CA INDEX NAME)

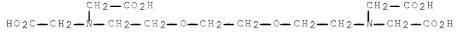
● Fe(II)

● Li

IT 67-42-5, EGTA 139-13-9, Glycine, N,N-bis(carboxymethyl)- 33943-39-4, Lithium phosphate (Li2HPO4)
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(preparation of cathode material for secondary batteries)

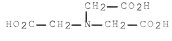
RN 67-42-5 HCAPLUS

CN 6,9-Dioxa-3,12-diazatetradecanedioic acid, 3,12-bis(carboxymethyl)- (CA INDEX NAME)



RN 139-13-9 HCAPLUS

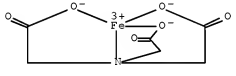
CN Glycine, N,N-bis(carboxymethyl)- (CA INDEX NAME)



RN 33943-39-4 HCAPLUS
CN Phosphoric acid, dilithium salt (8CI, 9CI) (CA INDEX NAME)

●2 Li

IT 16448-54-7P
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); PROC (Process); RACT (Reactant or reagent)
(preparation of cathode material for secondary batteries)
RN 16448-54-7 HCAPLUS
CN Iron, [N,N-bis[(carboxy-κO)methyl]glycinato(3-)-κN,κO]-, (T-4)- (CA INDEX NAME)



OSC.G 2 THERE ARE 2 CAPLUS RECORDS THAT CITE THIS RECORD (2 CITINGS)

L79 ANSWER 2 OF 3 HCAPLUS COPYRIGHT 2010 ACS on STN
AN 1997:295088 HCAPLUS Full-text
DN 127:43969
OREF 127:8214h,8215a
TI Interactions in the M2O-P2O5-NiO system (M = Li, Na, K)
AU Nagornyi, P. G.; Petrenko, O. V.; Slobodyanik, N. S.
CS Nats. Univ. im. Tarasa Shevchenka, Kiev, Ukraine
SO Ukrainskii Khimicheskii Zhurnal (Russian Edition) (1996), 62(11-12), 14-18
CODEN: UKZHAU; ISSN: 0041-6045
PB Institut Obshchei i Neorganicheskoi Khimii NAN Ukrainy
DT Journal
LA Russian
AB The reactions of NiO with melts of MH2PO4 or M2HPO4 (M = Li, Na, K) were studied by the isothermal saturation and slow cooling methods at 1000-750°. The composition of the products was determined and the products were characterized by x-ray phase anal., IR spectra and derivatog. anal.
IT 13977-83-8P, Lithium nickel phosphate (LiNiPO4)
RL: SPN (Synthetic preparation); PREP (Preparation)
(preparation by reaction of nickel oxide with alkali metal phosphate melts)
RN 13977-83-8 HCAPLUS
CN Phosphoric acid, lithium nickel(2+) salt (1:1:1) (8CI, 9CI) (CA INDEX NAME)

IT 13453-80-0, Lithium dihydrogen phosphate 33943-39-4, Dilithium phosphate
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of nickel oxide with alkali metal phosphate melts)
RN 13453-80-0 HCAPLUS
CN Phosphoric acid, lithium salt (1:1) (CA INDEX NAME)

RN 33943-39-4 HCAPLUS
CN Phosphoric acid, dilithium salt (8CI, 9CI) (CA INDEX NAME)

L79 ANSWER 3 OF 3 HCAPLUS COPYRIGHT 2010 ACS on STN
AN 1957:68681 HCAPLUS Full-text
DN 51:68681
OREF 51:12450e-f
TI Purification of lithium compounds
PA Pechiney-Compagnie de Produits Chimiques et Electrometallurgiques
DT Patent
LA Unavailable
FAN.CNT 1

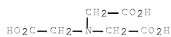
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	FR 1137089		19570523	FR	19551126 <--
	GB 834121			GB	

AB Addition of complexing agents, e.g. ethylenediaminetetraacetic or nitriliotriacetic acid, to the aqueous solution of the crude material converts foreign metals into soluble complexes, so that Li can be selectively precipitated as the carbonate, fluoride, phosphate, borate, oxalate, or stearate by adjusment of the pH to > 7.

IT 139-13-9P, Acetic acid, nitrilotri-
RL: PREP (Preparation)
(lithium compound purification by)

RN 139-13-9 HCAPLUS

CN Glycine, N,N-bis(carboxymethyl)- (CA INDEX NAME)



IT 10377-52-3P, Lithium phosphate
RL: PREP (Preparation)
(purification of)

RN 10377-52-3 HCAPLUS

CN Phosphoric acid, lithium salt (1:3) (CA INDEX NAME)

●3 Li

=> d l80 bib abs hitstr retable tot

L80 ANSWER 1 OF 21 HCAPLUS COPYRIGHT 2010 ACS on STN

AN 2010:85687 HCAPLUS Full-text

DN 152:196501

TI Inorganic binders for battery electrodes and their aqueous processing

IN Kay, Andreas

PA Dow Global Technologies Inc., USA

SO PCT Int. Appl., 22pp.
CODEN: PIXXD2

DT Patent

LA English

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI WO 2010007543	A1	20100121	WO 2009-IB52543	20090615
W: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW				
RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU,				

IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

PRAI WO 2008-IB52832 A 20080715

AB Battery electrodes, and more particularly rechargeable lithium battery electrodes, are prepared with active materials and contain an inorg. binder between the electrode materials and adhesion to a current collector. The inorg. binder comprises a metal orthophosphate, a metal metaphosphate, a metal polyphosphate, fluorophosphates, polyfluorophosphates, a metal carbonate, a metal borate, polyborates, fluoroborates, a metal sulfate, fluorosulfates, an oxide compds., fluorooxides, a metal aluminate, fluoroaluminates, silicates, fluorosilicates or a mixture thereof. These electrodes are produced from an aqueous slurry of active electrode materials, optionally conductive additives and a soluble precursor or nanoparticles or a colloidal dispersion of the inorg. binder by spreading the slurry on a current collector and drying.

IT 10377-52-3 13453-80-0, Dihydrogen lithium phosphate (H2LiPO4) 33943-39-4, Lithium phosphate (Li2HPO4)
RL: TEM (Technical or engineered material use); USES (Uses)
(binder for battery electrode; inorg. binders for battery electrodes and aqueous processing thereof)

RN 10377-52-3 HCAPLUS
CN Phosphoric acid, lithium salt (1:3) (CA INDEX NAME)

3 Li

RN 13453-80-0 HCAPLUS
CN Phosphoric acid, lithium salt (1:1) (CA INDEX NAME)

Li

RN 33943-39-4 HCAPLUS
CN Phosphoric acid, dilithium salt (8CI, 9CI) (CA INDEX NAME)

2 Li

IT 407629-83-8, Iron lithium manganese phosphate
(Li(Mn0.8Fe0.2)PO4)
RL: NANO (Nanomaterial); TEM (Technical or engineered material use); USES (Uses)
(cathode material; inorg. binders for battery electrodes and aqueous processing thereof)
RN 407629-83-8 HCAPLUS
CN Phosphoric acid, iron(2+) lithium manganese(2+) salt (5:1:5:4) (9CI) (CA INDEX NAME)

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Huang Hong	2004			US 20040101755 A1	HCAPLUS
Hwang Duck-Chul	2008			US 20080118836 A1	

L80 ANSWER 2 OF 21 HCAPLUS COPYRIGHT 2010 ACS on STN
AN 2009:1544880 HCAPLUS Full-text
DN 152:100537
TI Method for production of ferrous lithium phosphate
IN Yang, Chengyun
PA Peop. Rep. China
SO Faming Zhuanli Shenqing Gongkai Shuomingshu, 11pp.
CODEN: CNXXEV
DT Patent
LA Chinese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	CN 101597047	A	20091209	CN 2009-10094759	20090722
PRAI	CN 2009-10094759		20090722		

AB The method comprises (1) grinding the raw materials in a grinder to give precursors, (2) placing the precursors in a semi-closed casket, pressing to repel air, placing a high temperature-resisting board on casket with a space left between the casket and the temperature-resisting board, inverting the casket with the board into another semi-closed casket, filling the casket with C powders, placing a high temperature-resisting board with pores on C powders, and (3) calcining the casket at 600-800° for 6-24 h, and cooling to room temperature The Fe source is ferric phosphate, ferrous oxalate, ferric oxide,

ferric citrate, ferric stearate, etc. The P source is phosphoric acid, ammonium dihydrogen phosphate, Li dihydrogen phosphate, Li phosphate, etc. The Li source is Li carbonate, Li hydroxide monohydrate, Li nitrate, Li phosphate, etc. Dopant is added into the precursors, and is one or more of Ni, Mn, Zn, Ti, Mg, Al, Zr, Nb, etc. The invention produces ferrous lithium phosphate without protection of inert gas, which lowers production cost for cathode of lithium batteries.

IT 15365-14-7, Ferrous lithium phosphate
RL: IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)
(improved method for production of ferrous lithium phosphate)

RN 15365-14-7 HCAPLUS
CN Phosphoric acid, iron(2+) lithium salt (1:1:1) (CA INDEX NAME)

● Fe(II)

● Li

IT 10377-52-3, Lithium phosphate
13453-80-0, Lithium dihydrogen phosphate 33943-39-4, Di-Lithium hydrogen phosphate
RL: RCT (Reactant); RACT (Reactant or reagent)
(improved method for production of ferrous lithium phosphate)

RN 10377-52-3 HCAPLUS
CN Phosphoric acid, lithium salt (1:3) (CA INDEX NAME)

●3 Li

RN 13453-80-0 HCAPLUS
CN Phosphoric acid, lithium salt (1:1) (CA INDEX NAME)

RN 33943-39-4 HCAPLUS
CN Phosphoric acid, dilithium salt (8CI, 9CI) (CA INDEX NAME)

L80 ANSWER 3 OF 21 HCAPLUS COPYRIGHT 2010 ACS on STN
AN 2009:1544873 HCAPLUS Full-text
DN 152:123654
TI Method for preparing Li ion battery positive electrode material ferrous lithium phosphate without the protection of inert gas
IN Yang, Chengyun
PA Peop. Rep. China
SO Faming Zhuanli Shenqing Gongkai Shuomingshu, 11pp.
CODEN: CNXXEV
DT Patent
LA Chinese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI CN 101597046	A	20091209	CN 2009-10094758	20090722
PRAI CN 2009-10094758		20090722		

AB The method comprises mixing the raw materials and grinding in the ball mill to obtain precursor; putting the precursor into a semi-closed small box, compacting for exhausting air, pressing a high-temperature resistant board with pore on the precursor or keeping gap between the high-temperature resistant board and the small box body, filling C powder (with larger particle size than the pore size on the high-temperature resistant board or the gas between the high-temperature resistant board and the box body) layer on the high-temperature resistant board for assuring that C powder will not fall on the precursor, and spreading a high-temperature resistant board with fine pore or keeping gap between the high-temperature resistant board and the small box body; heating from room temperature to 600-800° at a heating rate of 5-20℃/min, baking for 6-24h, and cooling to room temperature The raw materials comprise Fe source (ferric phosphate, ferrous oxalate, Fe2O3, FeO, ferric citrate, ferric stearate, or ferric acetate), P source (phosphoric acid, ammonium dihydrogen phosphate, dilithium hydrogen phosphate, lithium phosphate, diammonium hydrogen phosphate, or ammonium phosphate), and Li source (lithium carbonate, LiOH·H2O, lithium nitrate, lithium phosphate, etc.). The method has low manufacturing cost without the protection of inert gas.
IT 15365-14-7P, Ferrous lithium phosphate

RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(method for preparation of lithium ion battery pos. electrode material ferrous lithium phosphate without the protection of inert gas)

RN 15365-14-7 HCAPLUS
CN Phosphoric acid, iron(2+) lithium salt (1:1:1) (CA INDEX NAME)

● Fe(II)

● Li

IT 10377-52-3, Lithium phosphate
33943-39-4, Dilithium hydrogen phosphate
RL: RCT (Reactant); RACT (Reactant or reagent)
(method for preparation of lithium ion battery pos. electrode material ferrous lithium phosphate without the protection of inert gas)

RN 10377-52-3 HCAPLUS
CN Phosphoric acid, lithium salt (1:3) (CA INDEX NAME)

●3 Li

RN 33943-39-4 HCAPLUS
CN Phosphoric acid, dilithium salt (8CI, 9CI) (CA INDEX NAME)

●2 Li

L80 ANSWER 4 OF 21 HCAPLUS COPYRIGHT 2010 ACS on STN
AN 2009:1230188 HCAPLUS Full-text

DN 151:452708
TI Methods for preparing iron source material and ferrous oxalate for lithium ferrous phosphate
IN Cao, Wenyu; Zhang, Shuiyuan; Xiao, Feng
PA BYD Company Limited, Peop. Rep. China
SO U.S. Pat. Appl. Publ., 20pp.
CODEN: USXXCO
DT Patent
LA English
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI US 20090252668	A1	20091008	US 2008-176319	20080718
WO 2009124431	A1	20091015	WO 2008-CN70680	20080407

W: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW
RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, NO, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

PRAI WO 2008-CN70680 A 20080407
ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT
AB Methods for preparing iron source material and ferrous oxalate for lithium ferrous phosphate are disclosed. One method comprises bringing solution containing ferrite and soluble non-ferrous metal salts in contact with oxalate solution; wherein the method of contact is to allow a flow of the ferrite solution containing ferrite and soluble non-ferrous metal salts to come in contact with a flow of oxalate solution Another method comprises brings a stream of ferrite solution in contact with a stream of oxalate solution, wherein the flow rates of the ferrite solution and oxalate solution give the resulting slurry a pH of 2-6. The ferrous oxalate particles produces by the methods of the present invention are regularly shaped and have small and evenly distributed diams. Lithium ferrous phosphate made from iron source material and ferrous oxalate prepared using the methods of the present invention has small particle diameter, homogeneous particle size, good elec. conductivity, and superior electrochem. properties.
IT 15365-14-7P, Iron lithium phosphate LiFePO4
RL: IMF (Industrial manufacture); PREP (Preparation)
(methods for preparing iron source material and ferrous oxalate for lithium ferrous phosphate)
RN 15365-14-7 HCAPLUS
CN Phosphoric acid, iron(2+) lithium salt (1:1:1) (CA INDEX NAME)

IT 10377-52-3, Lithium phosphate
13453-80-0, Lithium dihydrogen phosphate 33943-39-4, DiLithium phosphate
RL: RCT (Reactant); RACT (Reactant or reagent)
(methods for preparing iron source material and ferrous oxalate for lithium ferrous phosphate)

RN 10377-52-3 HCAPLUS
CN Phosphoric acid, lithium salt (1:3) (CA INDEX NAME)

RN 13453-80-0 HCAPLUS
CN Phosphoric acid, lithium salt (1:1) (CA INDEX NAME)

RN 33943-39-4 HCAPLUS
CN Phosphoric acid, dilithium salt (8CI, 9CI) (CA INDEX NAME)

L80 ANSWER 5 OF 21 HCAPLUS COPYRIGHT 2010 ACS on STN
AN 2009:971433 HCAPLUS Full-text
DN 151:341344
TI Preparation of lithium iron phosphate/carbon composite cathode materials for lithium batteries by liquid phase evaporation
IN Ma, Xinsheng; Xu, Yunlong; Tao, Lili; Huang, Huaqing; Zhao, Chongjun; Qian, Xiuzhen
PA Shanghai Microtechnology and Nanotechnology Co., Ltd., Peop. Rep. China
SO Faming Zhuanli Shenqing Gongkai Shuomingshu, 14pp.
CODEN: CNXXEV
DT Patent
LA Chinese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI CN 101504979	A	20090812	CN 2009-10056956	20090319
PRAI CN 2009-10056956		20090319		

AB This method entails: (a) weighing an Fe source compound, a Li source compound and a P source compound, dissolving in H2O to obtain a mixed solution with a certain concentration, adding a C source, mixing uniformly, placing the reaction container in a water bath, controlling the water bath temperature, the stirring rate and the ultrasonic dispersion, and evaporating the mixed solution to obtain a precursor; (b) drying the precursor by IR radiation and/or with microwave, and milling into powder; and (c) placing the precursor powder in a high-temperature furnace, heating in a mixed atmospheric of H and Ar from room temperature to 500-800° at a heating rate of 2-10°/min, holding for 2-15 h and cooling naturally to room temperature In step (a), the mol. ratio of the Fe source compound, the Li source compound and the P source compound is Fe:Li:P=(1.0-1.1):(1.0-1.1):(1.0-1.1), preferably Fe:Li:P = 1.0:1.0:1.0. In step (c), the flow rate ratio of Ar to H is 5-11. This method has the advantages of controllable process, low energy consumption, short period, low Li source consumption and little cost. The obtained LiFePO4/C composite cathode has the advantage of high purity, small particle size, uniform particle size distribution and good electrochem. properties.
IT 13453-80-0, Lithium dihydrogen phosphate 33943-39-4, Dilithium hydrogen phosphate
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(in preparation of lithium iron phosphate/carbon composite cathode materials for lithium batteries by liquid phase evaporation)
RN 13453-80-0 HCAPLUS
CN Phosphoric acid, lithium salt (1:1) (CA INDEX NAME)

● Li

RN 33943-39-4 HCAPLUS
CN Phosphoric acid, dilithium salt (8CI, 9CI) (CA INDEX NAME)

IT 15365-14-7P, Iron lithium phosphate
(FeLiPO4)
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(preparation of lithium iron phosphate/carbon composite cathode materials for lithium batteries by liquid phase evaporation)
RN 15365-14-7 HCAPLUS
CN Phosphoric acid, iron(2+) lithium salt (1:1:1) (CA INDEX NAME)

L80 ANSWER 6 OF 21 HCAPLUS COPYRIGHT 2010 ACS on STN
AN 2009:599074 HCAPLUS Full-text
DN 151:11634
TI Preparation of metal doped LiFePO4 as cathode material for lithium ion batteries by co-precipitation
IN Ning, Yansheng; Xu, Han; Guo, Xifeng; Zhao, Qingyun
PA China National Offshore Oil Corp., Peop. Rep. China; CNOOC Tianjin Chemical Research & Design Institute
SO Faming Zhuanli Shenqing Gongkai Shuomingshu, 11pp.
CODEN: CNXXEV
DT Patent
LA Chinese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI CN 101428782	A	20090513	CN 2008-10239645	20081215
PRAI CN 2008-10239645		20081215		

AB The title method comprises mixing aqueous ferrous salt solution with P source solution, Li source solution and doping metal salt solution to obtain a precursor, and calcining under inert gas protection at 600-800°C for 8-36 h to give the cathode material. The ferrous salt is ferrous sulfate and/or ammonium ferrous sulfate. The P source is ammonium dihydrogen phosphate, phosphoric acid and/or ammonium monohydrogen phosphate. The Li source is LiOH, LiH2PO4 and/or Li2HPO4. The doping metal ion is Mn2+, and the Mn salt is MnSO4.
IT 15365-14-7P, Iron lithium phosphate

(LiFePO4)
RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(preparation of metal doped LiFePO4 as cathode material for lithium ion batteries by co-precipitation)
RN 15365-14-7 HCAPLUS
CN Phosphoric acid, iron(2+) lithium salt (1:1:1) (CA INDEX NAME)

IT 13453-80-0, Lithium dihydrogen phosphate 33943-39-4, Dilithium hydrogen phosphate
RL: RCT (Reactant); RACT (Reactant or reagent)
(preparation of metal doped LiFePO4 as cathode material for lithium ion batteries by co-precipitation)
RN 13453-80-0 HCAPLUS
CN Phosphoric acid, lithium salt (1:1) (CA INDEX NAME)

RN 33943-39-4 HCAPLUS
CN Phosphoric acid, dilithium salt (8CI, 9CI) (CA INDEX NAME)

L80 ANSWER 7 OF 21 HCAPLUS COPYRIGHT 2010 ACS on STN
AN 2008:1487731 HCAPLUS Full-text
DN 150:80802
TI Method for preparing lithium manganese phosphate as cathode material for

lithium ion battery
IN Yue, Min; Hou, Chunping; He, Xueqin; Zhang, Wanhong
PA Shenzhen BTR New Energy Materials Inc., Peop. Rep. China
SO Faming Zhuanli Shenqing Gongkai Shuomingshu, 27pp.
CODEN: CNXXEV
DT Patent
LA Chinese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI CN 101320809	A	20081210	CN 2008-10141632	20080717
PRAI CN 2008-10141632		20080717		

AB The title cathode material is composed of lithium manganese phosphate particles coated with carbon material 1-3 weight% of lithium manganese phosphate. The cathode material has a sp. surface area of 5-40 m2/g and a tap d. of 1.0-1.6 g/mL. The title method comprises preparing nanoparticles, performing liquid-phase mixing reaction, preparing precursor, torrefying, and coating with the carbon material. The cathode material has high electronic conductivity, no agglomeration, high charge/discharge capacity, high cycle stability, high safety, easy preparation, low cost, and little influence to environment.

IT 13826-59-0P, Lithium manganese phosphate
RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(method for preparing lithium manganese phosphate as cathode material for lithium ion battery)
RN 13826-59-0 HCAPLUS
CN Phosphoric acid, lithium manganese(2+) salt (1:1:1) (CA INDEX NAME)

IT 10377-52-3, Lithium phosphate
13453-80-0, Lithium dihydrogen phosphate 33343-39-4, Dilithium hydrogen phosphate
RL: RCT (Reactant); RACT (Reactant or reagent)
(method for preparing lithium manganese phosphate as cathode material for lithium ion battery)
RN 10377-52-3 HCAPLUS
CN Phosphoric acid, lithium salt (1:3) (CA INDEX NAME)

3 Li

RN 13453-80-0 HCAPLUS
CN Phosphoric acid, lithium salt (1:1) (CA INDEX NAME)

Li

RN 33943-39-4 HCAPLUS
CN Phosphoric acid, dilithium salt (8CI, 9CI) (CA INDEX NAME)

2 Li

L80 ANSWER 8 OF 21 HCAPLUS COPYRIGHT 2010 ACS on STN
AN 2008:875000 HCAPLUS Full-text
DN 149:248763
TI Method for preparing electrode material with ferrophosphorus
IN Wang, Guixin; Yan, Kangping
PA Sichuan University, Peop. Rep. China
SO Faming Zhuanli Shenqing Gongkai Shuomingshu, 9pp.
CODEN: CNXXEV
DT Patent
LA Chinese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	CN 101219783	A	20080716	CN 2008-10045243	20080123
PRAI	CN 2008-10045243		20080123		

AB The title method can prepare electrode material such as LiFePO4, LiFePO4/FeP2, LiFePO4/C, Li3Fe2(PO4)3, FeP, FeP2, Fe2P, Fe3P, Fe-Co-P, Fe-Ni-P, Fe-Ni-Co-P, etc. from ferrophosphorus with or without addition of other elements by mech. activation method, reaction pulverization method, rheol. phase reaction method, spray drying method, spray pyrolysis method, solid phase method, microwave method, H2O/alc. thermal synthesis method, sol-gel method, ion exchange method, etc. The method has the advantages of wide raw material

resources, low cost, simple operation, short flow process, etc., and realizes comprehensive use of resources.

IT 10377-52-3, Lithium phosphate
13453-80-0, Lithium dihydrogen phosphate 33943-39-4, Dilithium hydrogen phosphate
RL: RCT (Reactant); RACT (Reactant or reagent)
(method for preparing electrode material with ferrophosphorus)

RN 10377-52-3 HCAPLUS
CN Phosphoric acid, lithium salt (1:3) (CA INDEX NAME)

3 Li

RN 13453-80-0 HCAPLUS
CN Phosphoric acid, lithium salt (1:1) (CA INDEX NAME)

Li

RN 33943-39-4 HCAPLUS
CN Phosphoric acid, dilithium salt (8CI, 9CI) (CA INDEX NAME)

2 Li

IT 15365-14-7P, Iron lithium phosphate (FeLiPO4) 36050-25-0P, Iron lithium phosphate (Fe2Li3(PO4)3)
RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(method for preparing electrode material with ferrophosphorus)

RN 15365-14-7 HCAPLUS
CN Phosphoric acid, iron(2+) lithium salt (1:1:1) (CA INDEX NAME)

RN 36058-25-0 HCAPLUS
CN Phosphoric acid, iron(3+) lithium salt (3:2:3) (9CI) (CA INDEX NAME)

L80 ANSWER 9 OF 21 HCAPLUS COPYRIGHT 2010 ACS on STN
AN 2008:843351 HCAPLUS Full-text
DN 149:227142
TI Method for synthesizing LixMy(PO4)z compounds under electron beam irradiation
IN Zhao, Bing; Jiao, Zheng; Wu, Minghong; Yan, Jing; Zhong, Mingyang; He, Yaqin; Jiang, Yong; Sun, Yufei; Wang, Song
PA Shanghai University, Peop. Rep. China
SO Faming Zhuanli Shenqing Gongkai Shuomingshu, 6pp.
CODEN: CNXXEV
DT Patent
LA Chinese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
CN 101214942	A	20080709	CN 2008-10032410	20080108
PRAI CN 2008-10032410		20080108		

AB The title compds. have a formula of LixMy(PO4)z, wherein M is one or two of Fe, Co, Ni, Mn, V, Cu, Ti, Cr, Mg and Zn. The compds. are synthesized by the following steps of: (1) weighing soluble M salt and phosphorus-containing compound, dissolving in deionized water, adding proper complexing agent, and then adding soluble Li salt under stirring, (2) adding suitable dilute base solution to adjust pH to 6.5-7, and ultrasonic-vibrating for 5-10 min, (3) electron beam-irradiating at 20-40 Mrad in an electron accelerator (power 2.5 MeV and current 40 mA), (4) washing, centrifugating, and repeating many times to remove unreacted ion and complexing agent, (5) vacuum-drying, and (6) thermally treating in a tubular furnace at 400-600° for 5-10 h, and naturally

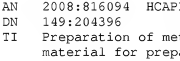
cooling to obtain the final product with particle size of 50-100 nm. The concentration ratio of complexing agent to M ion is (0.1-1):1. The M salt is M nitrate or sulfate. The P-containing compound is phosphoric acid, diammonium hydrogen phosphate or ammonium dihydrogen phosphate. The Li salt is lithium hydroxide, lithium chloride, lithium sulfate or lithium carbonate. The complexing agent is disodium ethylenediaminetetraacetate, citric acid or aminotriacetic acid. The product can be used to prepare cathode materials of lithium ion batteries.

IT 139-13-9

RL: NUU (Other use, unclassified); USES (Uses)
(method for synthesizing LixMy(PO4)z compds. under electron beam irradiation)

RN 139-13-9 HCAPLUS

CN Glycine, N,N-bis(carboxymethyl)- (CA INDEX NAME)



L80 ANSWER 10 OF 21 HCAPLUS COPYRIGHT 2010 ACS on STN

AN 2008:816094 HCAPLUS Full-text

DN 149:204396

TI Preparation of metal-doped ferrous oxalate dihydrate as iron source material for preparing metal-doped lithium iron(II) phosphate for use in lithium ion batteries

IN Cao, Wenyu; Zhang, Shuiyuan; Xiao, Feng

PA BYD Company Limited, Peop. Rep. China

SO Faming Zhuanli Shenqing Gongkai Shuomingshu, 26pp.
CODEN: CNXXEV

DT Patent

LA Chinese

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI CN 101209820	A	20080702	CN 2006-10167328	20061227
PRAI CN 2006-10167328		20061227		

AB Metal-doped ferrous oxalate dihydrate is prepared by contacting a ferrous salt (ferrous sulfate, ferrous chloride and/or ferrous acetate) and a soluble nonferrous metal salt with an oxalate salt till the pH of the mixed solution is 3-6. The nonferrous metal salt can be a sulfate, nitrate and/or chloride of a IIA metal, IIIA metal, IVA metal, such as magnesium sulfate, aluminum sulfate, or zirconium sulfate. The oxalate can be sodium oxalate, potassium oxalate, ammonium oxalate, and/or lithium oxalate. The lithium iron phosphate is prepared by sintering a mixture of a lithium source, phosphorus source and the iron source material at 650-850° for 8-40 h in an inert gas or reducing gas atm; followed by cooling. The lithium source can be lithium hydroxide, lithium carbonate, or lithium acetate. The phosphorus source can be ammonium phosphate, ammonium hydrogen phosphate, or lithium phosphate. The mol. ratio of lithium to iron to phosphorus is (1-1.07):1:1. The obtained lithium iron(II) phosphate has a small particle size, uniform particles, good conductivity and electrochem. properties.

IT 15365-14-7P, Iron lithium phosphate feLiPO4

RL: IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)
(metal-doped; preparation of metal-doped ferrous oxalate dihydrate as iron source material for preparing metal-doped FeLiPO4 for use in lithium ion

batteries)
RN 15365-14-7 HCAPLUS
CN Phosphoric acid, iron(2+) lithium salt (1:1:1) (CA INDEX NAME)

IT 554453-36-0P, Aluminum iron lithium phosphate
554453-38-2P, Iron lithium manganese phosphate
RL: IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)
(preparation of metal-doped ferrous oxalate dihydrate as iron source material for preparing metal-doped FeLiPO4 for use in lithium ion batteries)
RN 554453-36-0 HCAPLUS
CN Phosphoric acid, aluminum iron lithium salt (9CI) (CA INDEX NAME)

RN 554453-38-2 HCAPLUS
CN Phosphoric acid, iron lithium manganese(2+) salt (9CI) (CA INDEX NAME)

IT 10377-52-3, Lithium phosphate
13453-80-0, Lithium dihydrogen phosphate 33943-39-4, Dilithium hydrogen phosphate
RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(preparation of metal-doped ferrous oxalate dihydrate as iron source material for preparing metal-doped FeLiPO4 for use in lithium ion batteries)

RN 10377-52-3 HCAPLUS
CN Phosphoric acid, lithium salt (1:3) (CA INDEX NAME)

RN 13453-80-0 HCAPLUS
CN Phosphoric acid, lithium salt (1:1) (CA INDEX NAME)

RN 33943-39-4 HCAPLUS
CN Phosphoric acid, dilithium salt (8CI, 9CI) (CA INDEX NAME)

L80 ANSWER 11 OF 21 HCAPLUS COPYRIGHT 2010 ACS on STN
AN 2008:735672 HCAPLUS Full-text
DN 149:152744
TI Method for preparing ferrous oxalate used in preparation of lithium ferrous phosphate
IN Cao, Wenyu; Zhang, Shuiyuan; Xiao, Feng
PA Byd Co., Ltd., Peop. Rep. China
SO Faming Zhuanli Shenqing Gongkai Shuomingshu, 18pp.
CODEN: CNXXEV
DT Patent
LA Chinese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI CN 101200422	A	20080618	CN 2006-10167409	20061215
PRAI CN 2006-10167409		20061215		

AB The invention discloses a method for preparing ferrous oxalate through performing contact between ferrous salt solution flow and oxalate solution flow. The pH value of the obtained mixture is controlled at 2-6 by adjusting the flow rates of the ferrous salt solution flow and oxalate solution flow. By the method, lithium ferrous phosphate particles with high uniformity, small sizes, high carbon distribution uniformity, and good electrochem. properties can be obtained.
IT 15365-14-7P, Ferrous lithium phosphate
RL: IMF (Industrial manufacture); SPN (Synthetic preparation); PREP (Preparation)
(method for preparing ferrous oxalate used in preparation of lithium ferrous phosphate)
RN 15365-14-7 HCAPLUS
CN Phosphoric acid, iron(2+) lithium salt (1:1:1) (CA INDEX NAME)

IT 10377-52-3, Lithium phosphate
13453-80-0, Lithium dihydrogenphosphate 33943-39-4, Dilithium hydrogenphosphate
RL: RGT (Reagent); RACT (Reactant or reagent)

(method for preparing ferrous oxalate used in preparation of lithium ferrous phosphate)
RN 10377-52-3 HCAPLUS
CN Phosphoric acid, lithium salt (1:3) (CA INDEX NAME)

3 Li

RN 13453-80-0 HCAPLUS
CN Phosphoric acid, lithium salt (1:1) (CA INDEX NAME)

Li

RN 33943-39-4 HCAPLUS
CN Phosphoric acid, dilithium salt (8CI, 9CI) (CA INDEX NAME)

2 Li

L80 ANSWER 12 OF 21 HCAPLUS COPYRIGHT 2010 ACS on STN
AN 2008:450742 HCAPLUS Full-text
DN 148:520660
TI LiFePO4/C nano-composite cathode material and its manufacture
IN Xu, Yunlong; Ma, Hongyan; Tao, Lili
PA Shanghai Weina Company, Peop. Rep. China
SO Faming Zhuanli Shenqing Gongkai Shuomingshu, 11pp.
CODEN: CNXXEV
DT Patent
LA Chinese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI CN 101159328	A	20080409	CN 2007-10043889	20070717
PRAI CN 2007-10043889		20070717		

AB The title cathode material is obtained by (1) weighing a Li source, an iron source, and a phosphorus source at a molar ratio of (3.0-3.3):(1.0-1.1):(1.0-

1.1), and adding in a reaction container with an appropriate quantity of a carbon doped material and organic surfactant, (2) controlling the concentration and temperature of reaction solution to obtain a precursor gel, separating, washing, filtering and drying to obtain a precursor powder, and (3) tableting, putting in a crucible having a microwave absorbent, placing the crucible in a microwave oven, and heating for 3-30 min under 100-600 W to obtain the final product. The method has short preparation period, low energy consumption, and easy control of process, and is suitable for industrial production The cathode material has high purity, small particle size (< 100 nm), and good electrochem. properties.

IT 15365-14-7P, Iron lithium phosphate (FeLiPO4)
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(manufacture of LiFePO4/C composite cathode materials for secondary lithium batteries)

RN 15365-14-7 HCAPLUS
CN Phosphoric acid, iron(2+) lithium salt (1:1:1) (CA INDEX NAME)

Fe(II)

Li

IT 13453-80-0, Lithium dihydrogen phosphate 33943-39-4, Dilithium hydrogen phosphate
RL: RCT (Reactant); RACT (Reactant or reagent)
(manufacture of LiFePO4/C composite cathode materials for secondary lithium batteries)

RN 13453-80-0 HCAPLUS
CN Phosphoric acid, lithium salt (1:1) (CA INDEX NAME)

Li

RN 33943-39-4 HCAPLUS
CN Phosphoric acid, dilithium salt (8CI, 9CI) (CA INDEX NAME)

L80 ANSWER 13 OF 21 HCAPLUS COPYRIGHT 2010 ACS on STN
AN 2008:428956 HCAPLUS Full-text
DN 148:474802
TI Preparation method of lithium iron phosphate used as cathode active material for lithium ion secondary battery
IN Liu, Fei
PA Byd Company Limited, Peop. Rep. China
SO Faming Zhuanli Shenqing Gongkai Shuomingshu, 20pp.
CODEN: CNXXEV
DT Patent
LA Chinese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	CN 101152960	A	20080402	CN 2006-10152271	20060927
PRAI	CN 2006-10152271		20060927		

AB The title method comprises mixing elec. conductive particles, ferric ion- or ferrous ion-containing solution, and phosphate-containing solution at an Fe/P mol. ratio of (1-1.3):1, precipitating, separating solid, washing to obtain ferric or ferrous phosphate precipitation containing elec. conductive particles, mixing with Li source, and calcining at 500-900° for 8-48 h in inert or reducing atmospheric The cathode active material has good crystal structure and high specific capacitance.
IT 15365-14-7P, Iron lithium phosphate (FeLiPO4)
RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(preparation of lithium iron phosphate as cathode active material for lithium ion secondary battery)
RN 15365-14-7 HCAPLUS
CN Phosphoric acid, iron(2+) lithium salt (1:1:1) (CA INDEX NAME)

IT 10377-52-3, Lithium phosphate
13453-80-6, Lithium dihydrogen phosphate 32943-39-4, Dilithium hydrogen phosphate

RL: RCT (Reactant); RACT (Reactant or reagent)
(preparation of lithium iron phosphate as cathode active material for lithium ion secondary battery)

RN 10377-52-3 HCAPLUS
CN Phosphoric acid, lithium salt (1:3) (CA INDEX NAME)

3 Li

RN 13453-80-0 HCAPLUS
CN Phosphoric acid, lithium salt (1:1) (CA INDEX NAME)

Li

RN 33943-39-4 HCAPLUS
CN Phosphoric acid, dilithium salt (8CI, 9CI) (CA INDEX NAME)

2 Li

L80 ANSWER 14 OF 21 HCAPLUS COPYRIGHT 2010 ACS on STN
AN 2008:39052 HCAPLUS Full-text
DN 148:148439
TI Preparation and application of LiFePO4/Li3V2(PO4)3 composite cathode materials for lithium ion batteries
IN Wu, She-Huang; Yang, Mu-Rong; Ke, Wei-Hsin; Huang, Yuan-Lung; Yu, Nien-Chieh
PA Tatung Company, Taiwan
SO U.S. Pat. Appl. Publ., 11 pp.
CODEN: USXXCO
DT Patent
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 20080008938	A1	20080110	US 2007-783299	20070409

PRAI TW 2006-95124642 A 20060706
ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT
AB A method of preparing LiFePO4/Li3V2(PO4)3 composite cathode materials and their applications as cathode materials for lithium ion batteries are disclosed. The preparation method includes the following steps: (A) providing a mixture of iron powder, lithium salt, vanadium salt, and a phosphate salt whereafter these compds. are dissolved into a mixed acid solution; (B) drying the solution in order to obtain precursor powders; and (C) heating the precursor powders at a temperature ranging between 400 and 1000° to form LiFe1-y'Vy'PO4/Li3V2-y"Fey"(PO4)3 composite powders. Alternatively, prepare the composite cathode by preparing olivine LiFe1-y'Vy'PO4 and monoclinic Li3V2-y'Fey"(PO4)3 powders as in previous procedures followed by mixing adequately. The low cost of iron powder thus facilitates to prepared composite cathode materials exhibiting higher elec. conductivity and superior cycling performance at high rates than those of olivine LiFe1-y'Vy'PO4 and monoclinic Li3V2-y"Fey"(PO4)3. The invention will help the development of the lithium ion batteries and related industries.
IT 10377-52-3, Lithium phosphate
13453-80-0, Lithium dihydrogen phosphate 33943-39-4, Dilithium hydrogen phosphate
RL: RCT (Reactant); RACT (Reactant or reagent)
(preparation and application of LiFePO4/Li3V2(PO4)3 composite cathode materials for lithium ion batteries)
RN 10377-52-3 HCAPLUS
CN Phosphoric acid, lithium salt (1:3) (CA INDEX NAME)

RN 13453-80-0 HCAPLUS
CN Phosphoric acid, lithium salt (1:1) (CA INDEX NAME)

RN 33943-39-4 HCAPLUS
CN Phosphoric acid, dilithium salt (8CI, 9CI) (CA INDEX NAME)

2 Li

IT 15365-14-7P, Iron lithium phosphate felipo4
RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(preparation and application of LiFePO4/Li3V2(PO4)3 composite cathode materials for lithium ion batteries)
RN 15365-14-7 HCAPLUS
CN Phosphoric acid, iron(2+) lithium salt (1:1:1) (CA INDEX NAME)

Fe(II)

Li

L80 ANSWER 15 OF 21 HCAPLUS COPYRIGHT 2010 ACS on STN
AN 2007:850926 HCAPLUS Full-text
DN 147:280811
TI Method for preparing LiFePO4 particles with controllable morphology
IN Ni, Jiangfeng; Zhou, Henghui; Chen, Jitao; Zhang, Xinxiang
PA Pulead Technology Industry Co., Ltd., Peop. Rep. China
SO Faming Zhuanli Shenqing Gongkai Shuomingshu, 12pp.
CODEN: CNXXEV
DT Patent
LA Chinese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	CN 101007630	A	20070801	CN 2007-10000683	20070116
	CN 100480178	C	20090422		
PRAI	CN 2007-10000683		20070116		

AB The title method comprises the steps of: (1) mixing one or more kinds of compds. or solns. containing lithium ions, iron ions, and phosphate ions, adding solvent, adding crystal growth inhibitor (0.5-50 weight% of the theoretic product), and transferring to a hermetic reaction kettle, (2) performing solvent-thermal reaction to obtain the primary product, and (3) cooling, washing, filtering, and drying. The product can be calcined at high temperature for higher crystallinity. The LiFePO4 is useful as cathodic substance of lithium ion batteries for elec. tools, elec. bicycles, and elec. automobiles. The LiFePO4 particles have the advantages of various kinds of morphol., uniform size distribution, high controllability of morphol. and size, and small particles size. The method can be used for synthesizing

submicroscale and nanoscale products, and has the advantages of short reaction time and low energy consumption.

IT 15365-14-7P, Iron lithium phosphate, (LiFePO4)
RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(method for preparing LiFePO4 particles with controllable morphol.)

RN 15365-14-7 HCAPLUS

CN Phosphoric acid, iron(2+) lithium salt (1:1:1) (CA INDEX NAME)

● Fe(II)

● Li

IT 10377-52-3, Lithium phosphate
13453-80-0, Lithium dihydrogen phosphate 33943-39-4, Dilithium hydrogen phosphate
RL: RCT (Reactant); RACT (Reactant or reagent)
(method for preparing LiFePO4 particles with controllable morphol.)

RN 10377-52-3 HCAPLUS

CN Phosphoric acid, lithium salt (1:3) (CA INDEX NAME)

●3 Li

RN 13453-80-0 HCAPLUS

CN Phosphoric acid, lithium salt (1:1) (CA INDEX NAME)

● Li

RN 33943-39-4 HCAPLUS

CN Phosphoric acid, dilithium salt (8CI, 9CI) (CA INDEX NAME)

L80 ANSWER 16 OF 21 HCAPLUS COPYRIGHT 2010 ACS on STN
AN 2006:1015282 HCAPLUS Full-text
DN 145:474775
TI Method for manufacturing lithium ferrous phosphate as cathode material of lithium-ion batteries
IN Gu, Yijie; Huang, Xiaowen; Cui, Hongzhi
PA Shandong University of Science and Technology, Peop. Rep. China
SO Faming Zhuanli Shenqing Gongkai Shuomingshu, 5 pp.
CODEN: CNXXEV
DT Patent
LA Chinese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	CN 1837033	A	20060927	CN 2006-10043350	20060324
	CN 100413781	C	20080827		
PRAI	CN 2006-10043350		20060324		

AB The title method comprises: (1) mixing lithium salts, ferrous salts and ammonium dihydrogen phosphate at a mol. ratio (lithium ion to ferrous ion to phosphate radical) of (0.8-1.2):(0.8-1.2):(0.8-1.2) to obtain mixture A, (2) adding the mixture A in solution B (aqueous solution containing dissolvable salts and organic substances) at a weight ratio of 1:(0.1-10), stirring, placing into a high-temperature furnace, heating without air or oxidative gas atmospheric at a rate of 1-30°/min, keeping the temperature of 50-200° for 0-100 h (the higher the temperature is, the shorter the time is), carrying out high-temperature treatment by elec. heating, and cooling naturally to obtain lithium ferrous phosphate (LixFeyMzPO4) powder, and (3) grinding the powder to a particle size of 1-50 μm to obtain the final product. In step 1, lithium salt is one of lithium carbonate, lithium hydroxide, dilithium hydrogen phosphate, lithium sulfate, lithium acetate, lithium nitrate and lithium oxalate, and ferrous salt is ferrous acetate or ferrous oxalate. In solution B, the dissolvable salt (M) is at least one of nitrate, acetate, sulfate, and chloride of aluminum, titanium, magnesium, zirconium, vanadium, manganese, nickel, cobalt, niobium, rhodium, barium, and chromium with a doping amount of M/lithium mol. ratio of ≤ 0.3, and the dissolvable organic substance is at least one of sucrose, glucose, and macromol. compound pyrolyzed into carbon substances with good elec. conductivity with a doping amount of carbon/final product weight ratio ≤ 10. The title cathode material has the advantages of uniform distribution, and improved charge capacity.
IT 15365-14-7P, Ferrous lithium phosphate
RL: IMF (Industrial manufacture); SPN (Synthetic preparation); PREP (Preparation)
(magnesium or zirconium doped; process for manufacturing ferrous lithium phosphate as cathode active material for lithium ion batteries)
RN 15365-14-7 HCAPLUS
CN Phosphoric acid, iron(2+) lithium salt (1:1:1) (CA INDEX NAME)

IT 33943-39-4, Dilithium hydrogen phosphate
RL: RCT (Reactant); RACT (Reactant or reagent)
(process for manufacturing ferrous lithium phosphate as cathode active material for lithium ion batteries)
RN 33943-39-4 HCAPLUS
CN Phosphoric acid, dilithium salt (8CI, 9CI) (CA INDEX NAME)

L80 ANSWER 17 OF 21 HCAPLUS COPYRIGHT 2010 ACS on STN
AN 2006:878134 HCAPLUS Full-text
DN 146:29497
TI Method for preparing spherical or quasi-spherical metal lithium phosphate
IN Ni, Jiangfeng; Zhou, Henghui; Chen, Jitao; Zhang, Xinxiang
PA Pulead Technology Industry Co., Ltd, Peop. Rep. China
SO Faming Zhuanli Shenqing Gongkai Shuomingshu, 10pp.
CODEN: CNXXEV
DT Patent
LA Chinese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	CN 1821063	A	20060823	CN 2006-10011378	20060228
	CN 100390052	C	20080528		
PRAI	CN 2006-10011378		20060228		

AB The title method comprises: (1) pulverizing one or more compds. containing lithium ion, transition metal ions, and phosphate, (2) pyrolyzing under inert gas atmospheric, (3) adding molten alkali metal salts, wherein the mol. ratio of molten salts/transition metal ions is 0.1-10, and sintering, and (4) cooling, washing, filtering, drying, and pulverizing to obtain the final product with a particle size of 1-5 μm. The particle size of the final product can be controlled by reaction conditions. The method has the advantages of short sintering time requirement and low energy consumption. The obtained product has the advantages of low sp. surface area, good processing property, high tap d., high volumetric specific energy d., and good

safety. The product can be widely used in batteries of elec. tools, elec. bicycles, and elec. cars.

IT 10377-52-3, Lithium phosphate
13453-80-0, Lithium dihydrogen phosphate 33943-39-4, Dilithium hydrogen phosphate
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(method for preparing spherical or quasi-spherical metal lithium phosphate)

RN 10377-52-3 HCAPLUS
CN Phosphoric acid, lithium salt (1:3) (CA INDEX NAME)

3 Li

RN 13453-80-0 HCAPLUS
CN Phosphoric acid, lithium salt (1:1) (CA INDEX NAME)

Li

RN 33943-39-4 HCAPLUS
CN Phosphoric acid, dilithium salt (8CI, 9CI) (CA INDEX NAME)

2 Li

IT 13826-59-0P, Lithium manganese phosphate 15365-14-7P, Ferrous lithium phosphate 153456-68-1P 554452-38-2P, Iron lithium manganese phosphate
RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(method for preparing spherical or quasi-spherical metal lithium phosphate)

RN 13826-59-0 HCAPLUS
CN Phosphoric acid, lithium manganese(2+) salt (1:1:1) (CA INDEX NAME)

● Li

● Mn(II)

RN 15365-14-7 HCAPLUS
CN Phosphoric acid, iron(2+) lithium salt (1:1:1) (CA INDEX NAME)

● Fe(II)

● Li

RN 153456-60-1 HCAPLUS
CN Phosphoric acid, cobalt lithium nickel salt (9CI) (CA INDEX NAME)

● x Co(x)

● x Li

● x Ni(x)

RN 554453-38-2 HCAPLUS
CN Phosphoric acid, iron lithium manganese(2+) salt (9CI) (CA INDEX NAME)

L80 ANSWER 18 OF 21 HCAPLUS COPYRIGHT 2010 ACS on STN
AN 2005:589401 HCAPLUS Full-text
DN 143:118019
TI Process for preparing electroactive insertion compounds and electrode materials obtained therefrom
IN Gauthier, Laurent; Gauthier, Michel; Lavoie, Donald; Michot, Christophe; Ravet, Nathalie
PA Universite De Montreal, Can.; Centre National de la Recherche Scientifique; Phostech Lithium Inc.
SO PCT Int. Appl., 50 pp.
CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2005062404	A1	20050707	WO 2004-CA2182	20041222
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
	RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
	CA 2550496	A1	20050707	CA 2004-2550496	20041222
	EP 1702373	A1	20060920	EP 2004-802357	20041222
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, FI, RO, CY, TR, BG, CZ, EE, HU, PL, SK, IS				
	CN 1926701	A	20070307	CN 2004-80041561	20041222
	JP 2007515762	T	20070614	JP 2006-545870	20041222
	US 20060127767	A1	20060615	US 2005-536431	20051116
	US 7534408	B2	20090519		
	KR 2007019972	A	20070216	KR 2006-714689	20060721
	US 20090189114	A1	20090730	US 2009-418176	20090403
PRAI	US 2003-531606P	P	20031223		
	WO 2004-CA2182	W	20041222		
	US 2005-536431	A1	20051116		

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

AB The invention relates to a process for preparing an at least partially lithiated transition metal oxyanion-based lithium-ion reversible electrode material, which comprises providing a precursor of the lithium-ion reversible electrode material, heating the precursor, melting same at a temperature sufficient to produce a melt comprising an oxyanion containing liquid phase, cooling the melt under conditions to induce solidification thereof and obtain a solid electrode that is capable of reversible lithium ion deinsertion/insertion cycles for use in a lithium battery. The invention also relates to lithiated or partially lithiated oxyanion-based-lithium-ion reversible electrode materials obtained by the aforesaid process.

IT 13816-45-0, Triphylite
RL: DEV (Device component use); USES (Uses)
(process for preparing electroactive insertion compds. and electrode materials obtained therefrom)

RN 13816-45-0 HCAPLUS

CN Triphylite (FeLi(PO4)) (7CI, 9CI) (CA INDEX NAME)

● Fe(II)

● Li

IT 554453-38-2P, Iron lithium manganese phosphate
RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(process for preparing electroactive insertion compds. and electrode materials obtained therefrom)

RN 554453-38-2 HCAPLUS

CN Phosphoric acid, iron lithium manganese(2+) salt (9CI) (CA INDEX NAME)

●x Fe(x)

●x Li

●x Mn(II)

IT 10377-52-3, Lithium phosphate
13453-80-0, Lithium dihydrogen phosphate 33943-29-4

RL: RCT (Reactant); RACT (Reactant or reagent)
(process for preparing electroactive insertion compds. and electrode materials obtained therefrom)

RN 10377-52-3 HCAPLUS
CN Phosphoric acid, lithium salt (1:3) (CA INDEX NAME)

3 Li

RN 13453-80-0 HCAPLUS
CN Phosphoric acid, lithium salt (1:1) (CA INDEX NAME)

Li

RN 33943-39-4 HCAPLUS
CN Phosphoric acid, dilithium salt (8CI, 9CI) (CA INDEX NAME)

2 Li

IT 13826-59-0P, Lithium manganese phosphate 15365-14-7DP
, chromium- and molybdenum-doped
RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(process for preparing electroactive insertion compds. and electrode materials obtained therefrom)

RN 13826-59-0 HCAPLUS
CN Phosphoric acid, lithium manganese(2+) salt (1:1:1) (CA INDEX NAME)

RN 15365-14-7 HCAPLUS
CN Phosphoric acid, iron(2+) lithium salt (1:1:1) (CA INDEX NAME)

IT 15365-14-7
RL: TEM (Technical or engineered material use); USES (Uses)
(process for preparing electroactive insertion compds. and electrode materials obtained therefrom)
RN 15365-14-7 HCAPLUS
CN Phosphoric acid, iron(2+) lithium salt (1:1:1) (CA INDEX NAME)

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Board Of Regents	1999			US 5910382 A	HCAPLUS
Bykov	1987	32	1515	Kristallografiya	HCAPLUS
Hydro - Quebec	2002			WO 0227824	HCAPLUS

Sony Corporation	2003		EP 1339119 A1	HCAPLUS
Valence Technology Inc	1998		WO 9812761	HCAPLUS
Valence Technology Inc	2001		CA 2395115 C	HCAPLUS
Valence Technology Inc	2003		US 6645452 B1	HCAPLUS

OSC.G 1 THERE ARE 1 CAPLUS RECORDS THAT CITE THIS RECORD (1 CITINGS)

L80 ANSWER 19 OF 21 HCAPLUS COPYRIGHT 2010 ACS on STN
AN 2005:409830 HCAPLUS Full-text
DN 142:466462
TI Product and method for the processing of precursors for lithium phosphate electrode active materials for batteries
IN Adamson, George; Barker, Jeremy; Dirilo, Allan; Faulkner, Titus; Saidi, Yazid M.; Swoyer, Jeffrey
PA Valence Technology, Inc., USA
SO PCT Int. Appl., 61 pp.
CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2005043647	A2	20050512	WO 2004-US34229	20041015
	WO 2005043647	A3	20060511		
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
	RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
	US 20050194567	A1	20050908	US 2004-961673	20041008
	US 7348100	B2	20080325		
	CA 2542790	A1	20050512	CA 2004-2542790	20041015
	DE 112004001997	T5	20061026	DE 2004-112004001997	20041015
	CN 1871726	A	20061129	CN 2004-80031066	20041015
	CN 100468833	C	20090311		
	US 20080157024	A1	20080703	US 2008-46942	20080312
PRAI	US 2003-513242P	P	20031021		
	US 2004-961673	A	20041008		
	WO 2004-US34229	W	20041015		

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

AB The invention concerns methods for producing an electrode active material precursor, comprising: (a) producing a mixture comprising particles of lithium hydrogen phosphate, having a first average particle size, and a metal hydroxide, having a second average particle size; and (b) grinding the mixture in a jet mill for a period of time suitable to produce a generally homogeneous mixture of particles having a third average size smaller than the first average size. The precursor may be used as a starting material for making electrode active materials for use in a battery, comprising lithium, a transition metal, and phosphate or a similar anion.

IT 13943-39-4, DiLithium hydrogen phosphate
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
(product and method for processing of precursors for lithium phosphate electrode active materials for batteries)

RN 33943-39-4 HCAPLUS
CN Phosphoric acid, dilithium salt (8CI, 9CI) (CA INDEX NAME)

IT 15365-14-7, Iron lithium phosphate felipo4
RL: DEV (Device component use); USES (Uses)
(product and method for processing of precursors for lithium phosphate electrode active materials for batteries)
RN 15365-14-7 HCAPLUS
CN Phosphoric acid, iron(2+) lithium salt (1:1:1) (CA INDEX NAME)

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Anon				US 6528033 B1	HCAPLUS
Anon				US 6794084 B2	HCAPLUS

OSC.G 2 THERE ARE 2 CAPLUS RECORDS THAT CITE THIS RECORD (2 CITINGS)

L80 ANSWER 20 OF 21 HCAPLUS COPYRIGHT 2010 ACS on STN
AN 2005:368529 HCAPLUS Full-text
DN 142:433067
TI Manufacture of powdered anode active mass, the powdered electrode active mass, the electrode, and lithium battery
IN Saito, Mitsumasa; Toge, Yoshiyuki
PA Sumitomo Osaka Cement Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 15 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

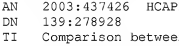
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 2005116393	A	20050428	JP 2003-350632	20031009
PRAI JP 2003-350632		20031009		

AB The powdered anode active mass is LixMyM'zPO4 (M = Fe, Co, Mn, Ni, Cr, and/or Cu; M' = Mg, Ca, Ba, Ti, Zn, b, Al, Ga, In, Si, Ge, Sc, Y, and/or rare earth metal), and is prepared by spraying a solution, dispersion, or suspension containing LiOH, sources of M and M', H3PO4 and/or phosphate salt, reaction inhibitor for LiOH and H3PO4 and/or phosphate, and reaction inhibitor for M and M' sources and H3PO4 and/or phosphate in a high temperature atmospheric to obtain a precursor, and firing the precursor.

IT 139-13-9, Nitrilotriacetic acid
RL: NUU (Other use, unclassified); USES (Uses)
(in manufacture of powdered anode active mass by high temperature mist spraying and firing for secondary lithium batteries)

RN 139-13-9 HCAPLUS

CN Glycine, N,N-bis(carboxymethyl)- (CA INDEX NAME)



L80 ANSWER 21 OF 21 HCAPLUS COPYRIGHT 2010 ACS on STN

AN 2003:437426 HCAPLUS Full-text

DN 139:278928

TI Comparison between different LiFePO4 synthesis routes and their influence on its physico-chemical properties

AU Franger, Sylvain; Le Cras, Frederic; Bourbon, Carole; Rouault, Helene

CS DRT/DTEN/SCSE/LSEM, Commissariat a l'Energie Atomique, Grenoble, 38054, Fr.

SO Journal of Power Sources (2003), 119-121, 252-257
CODEN: JPSODZ; ISSN: 0378-7753

PB Elsevier Science B.V.

DT Journal

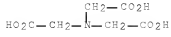
LA English

AB LiFePO4 powders were synthesized using solid state reactions at high temps., co-precipitation in aqueous medium, hydrothermal synthesis or mechanochem. activation. The samples were characterized by XRD, chemical titration and their electrochem. performance were studied for cycling behavior. It is advantageous to introduce an electronic conductor precursor (typically a sucrose) during or after the synthesis to overcome the poor charge transfer associated with LiFePO4.

IT 139-13-9D, Nitrilotriacetic acid, iron complexes
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
(in synthesis of LiFePO4 for cathodes of lithium batteries)

RN 139-13-9 HCAPLUS

CN Glycine, N,N-bis(carboxymethyl)- (CA INDEX NAME)



RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Amine, K	2000	3	178	Electrochem Solid-St	HCAPLUS

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Croce, F                |2001 |4    |A121  |Electrochem Solid-St|HCAPLUS
Franger, S              |2002 |5    |A231  |Electrochem Solid-St|HCAPLUS
Franger, S              |2002 |     |      |Proceedings of the O|
Garcia-Moreno, O        |2001 |13   |1570  |Chem Mater          |HCAPLUS
Padhi, A                |1997 |144  |1188  |J Electrochem Soc   |HCAPLUS
Poisson, S              |1998 |138  |32    |J Solid State Chem  |HCAPLUS
Ravet, N                |2001 |9798 |503   |J Power Sources     |
Yamada, A               |2001 |148  |A224  |J Electrochem Soc   |HCAPLUS
Yang, S                 |2001 |3    |505   |Electrochem Commun  |HCAPLUS
OSC.G   109   THERE ARE 109 CAPLUS RECORDS THAT CITE THIS RECORD (110 CITINGS)


=> d his

     (FILE 'HOME' ENTERED AT 13:59:20 ON 17 MAR 2010)
               SET COST OFF

     FILE 'HCAPLUS' ENTERED AT 13:59:30 ON 17 MAR 2010
L1             1 S US20060204848/PN OR (US2006-537947 OR WO2003-FR50172 OR FR200
                 E FRANGER/AU
L2            33 S E5,E6
                 E MARTINET/AU
L3             1 S E3
                 E MARTINET S/AU
L4            29 S E3,E4
                 E LE CRAS/AU
L5            63 S E5-E7
                 E LECRAS/AU
L6             1 S E4
                 E CRAS/AU
                 E BOURBON/AU
L7            37 S E10,E11
                 SEL RN L1

     FILE 'REGISTRY' ENTERED AT 14:02:39 ON 17 MAR 2010
L8            12 S E1-E12
L9             2 S L8 AND (67-42-5 OR C6H9NO6)
L10            1 S L8 AND H3O4P AND LI/ELS AND 2/NC
L11           12 S 7664-38-2/CRN AND LI/ELS AND 2/NC
L12            7 S L11 NOT (IDS/CI OR 6LI OR MNS/CI)
L13            6 S L12 NOT L10
L14            9 S L8 NOT L9,L10,L13
L15            3 S L14 AND LI/ELS
L16            1 S L15 AND FE/ELS

     FILE 'HCAPLUS' ENTERED AT 14:08:02 ON 17 MAR 2010
L17          111 S L10
L18           72 S DILITHIUM()(PHOSPHATE OR HYDROGEN PHOSPHATE)
L19           39 S LI2HPO4
L20            7 S DILITHIUM HYDROGENPHOSPHATE
L21            1 S DI LITHIUM()(PHOSPHATE OR HYDROGEN PHOSPHATE OR HYDROGENPHOSP
L22            3 S PHOSPHORIC ACID(L)DILITHIUM SALT
L23          137 S L17-L22
L24         4408 S LITHIUM PHOSPHATE
L25         1990 S L13
L26          102 S L23 AND L24,L25
L27          137 S L23,L26
L28         4882 S L24,L25 NOT L27
L29         9790 S L9
L30        13757 S EGTA
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L31        6030 S NITRILOTRIACETIC ACID
L32        6967 S NTA
L33           3 S NITRILOTRIS METHYLENECARBOXYLIC ACID
L34       26751 S L29-L33
L35           1 S L27 AND L34
L36           7 S L28 AND L34
L37           4 S L36 AND (149:227142 OR 142:433067 OR 139:278928 OR 51:68681)/
L38           1 S L1-L7 AND L27
L39          27 S L1-L7 AND L28
L40           5 S L35,L37,L38
                SEL RN

     FILE 'REGISTRY' ENTERED AT 14:19:31 ON 17 MAR 2010
L41          45 S E13-E57
L42       26393 S LI/ELS AND (MN OR FE OR NI OR CO)/ELS
L43        7110 S L42 AND 4/O
L44         702 S L43 NOT (AYS OR TIS)/CI
L45         112 S L44 AND 3/NC
L46          74 S L45 AND (SI OR S OR AL OR P OR GE OR AS OR MO)/ELS
L47          61 S L46 NOT (C OR N)/ELS
L48          60 S L47 NOT RSD/FA
L49          38 S L45 NOT L46
L50         590 S L44 NOT L45
L51         375 S L50 AND (SI OR S OR AL OR P OR GE OR AS OR MO)/ELS
L52         264 S L51 NOT (C OR N)/ELS
L53         256 S L52 NOT RSD/FA
L54         119 S L53 NOT (NA OR NB OR ZN OR CA OR K OR MG OR W OR V OR CU OR T
L55         101 S L54 NOT (AG OR CD OR HF OR TA OR RB)/ELS
L56          90 S L55 NOT (H2O OR CCS/CI)
L57          88 S L56 NOT (HG OR BA)/ELS

     FILE 'HCAPLUS' ENTERED AT 14:54:02 ON 17 MAR 2010
L58        3091 S L48 OR L57
L59          20 S L58 AND L27
L60           1 S L59 AND L40
L61           5 S L40,L60
L62          24 S L59,L61
L63          18 S L62 AND L13
L64          24 S L62,L63

     FILE 'REGISTRY' ENTERED AT 14:55:05 ON 17 MAR 2010
L65           2 S L8 AND CCS/CI
L66           1 S L65 AND FE/ELS

     FILE 'HCAPLUS' ENTERED AT 14:55:22 ON 17 MAR 2010
L67           1 S L66 AND L64
L68          24 S L64,L67
L69           1 S L68 AND PY<=2002 NOT P/DT
L70           2 S L68 AND (PY<=2002 OR PRY<=2002 OR AY<=2002) NOT L69
L71          20 S L68-L70 AND L17
L72          20 S L71 AND L58
L73           1 S L72 AND L34
L74          20 S L72,L73
L75           4 S L68 NOT L74
L76           1 S L75 AND L10,L13
L77          20 S L74 AND L10,L13
L78           3 S L69,L70
L79           3 S L78 AND L1-L7,L17-L40,L58-L64,L67-L78
L80          21 S L68-L78 NOT L79
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FILE 'HCAPLUS' ENTERED AT 14:59:48 ON 17 MAR 2010

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